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Editorial

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This April 2019 issue of *Structures and Buildings* contains six papers. It covers a broad range of research topics. Having read through all the papers, I found that all the authors have completed significant hard work in deliver their research and they bring useful insight in the pertinent topics. Therefore, the readers can benefit from the research introduced in this issue.

In the first paper, Li *et al.* (2019) introduce their work in shear tests on 16 sea sand concrete (SSC) beams reinforced with basalt-fibre-reinforced polymer bars (BFRPBs). They also identified their failure modes, shear capacities and influencing factors. The results revealed two primary failure modes: bending failure and shear-compression failure. A new formula for calculating the shear capacity of SSC beams reinforced with BFRPBs is presented by incorporating the effect of the shear span ratio. The results calculated using the proposed formula were consistent with the experimental results.

Adhikary and Dutta (2019) present a comprehensive review of blast effects on structures, material characteristics under high strain rates, modelling and analysis considerations, response criteria for various structural components and design guidelines, blast testing retrofit methodology and probable areas of future research. The review is based on more than 100 research articles. Thus, this paper provides a systematic prologue that will serve as a concise guide to identifying the fundamental issues associated with the design of structures to resist explosion effects.

In the following paper (Arslan *et al.*, 2019), a total of nine beams having various amounts of steel fibre and web reinforcement were tested under three-point loading to examine the effects of steel fibres on the shear behaviour of reinforced concrete beams with web reinforcement. In addition, a number of equations for predicting the shear strength of steel-fibre-reinforced concrete beams with web reinforcement were assessed by using a limited number of beams available in the literature.

Madi *et al.* (2019) introduce the results from a series of experimental tests using low-cost/low-strength concrete, containing

a small amount of cement and using sand as the only aggregate. The experimental results are presented, analysed and compared with those obtained for non-composite rectangular hollow section steel columns. They also use the Eurocodes design rules to assess their applicability to low-performance concrete.

In the penultimate paper, Rahimiasl and Bakhshi (2019) introduce a new comparative performance measure based on a structure's seismic fragility curve. Performance improvement factor (PIF), was used to compare the seismic performance and reliability of two structures. A prototype five-span 12-storey steel frame was equipped with three patterns of viscous dampers and their seismic performance was studied. The distribution of dampers along the height of the structure was optimized in three hazard levels using a genetic algorithm and the structure was subjected to 12 ground motion records scaled to levels of 50%, 10% and 2% probability of exceedance in 50 years. The objective function of the optimization process was defined to achieve immediate occupation, life safety and collapse prevention performance levels at each of the three considered hazard levels. The performance of the primary and rehabilitated structures was investigated using fragility curves and the PIF.

In the final paper, Pereira *et al.* (2019) investigate the effect of fillet welds on T-joints with thin-walled chords. Experimental and numerical analyses were conducted and the results were compared with current design prescriptions. Three experiments were performed, with different weld sizes, in a machine that provided displacement-controlled testing with data acquisition from strain gauges and displacement transducers. Finite-element models were developed which showed good correlation with the experimental data, indicating that the size of the weld influences joint resistance.

REFERENCES

- Adhikary SD and Dutta SC (2019) Blast resistance and mitigation strategies of structures: present status and future trends. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **172(4)**: 249–266, <https://doi.org/10.1680/jstbu.17.00056>.

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- Arslan G, Keskin RSO and Birincioglu MI (2019) Shear strength of steel-fibre-reinforced concrete beams with web reinforcement. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **172(4)**: 267–277, <https://doi.org/10.1680/jstbu.17.00115>.
- Li L, Zeng L, Li S and Liu F (2019) Shear capacity of sea sand concrete beams with polymer bars. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **172(4)**: 237–248, <https://doi.org/10.1680/jstbu.16.00164>.
- Madi W, Ihaddoudène ANT, Costa-Neves LF and Vellasco PCGS (2019) Uniaxial behaviour of sand concrete-filled steel tube columns. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **172(4)**: 278–288, <https://doi.org/10.1680/jstbu.17.00145>.
- Pereira DJR, Sarmanho AMC, Nunes GV, Guerra MJL and Alves VN (2019) Effect of fillet welds on T-joints with thin-walled chords. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **172(4)**: 301–312, <https://doi.org/10.1680/jstbu.18.00043>.
- Rahimiasl M and Bakhshi A (2019) The effects of viscous dampers on the reliability of steel structures using a PIF index. *Proceedings of the Institution of Civil Engineers – Structures and Buildings* **172(4)**: 289–300, <https://doi.org/10.1680/jstbu.17.00163>.